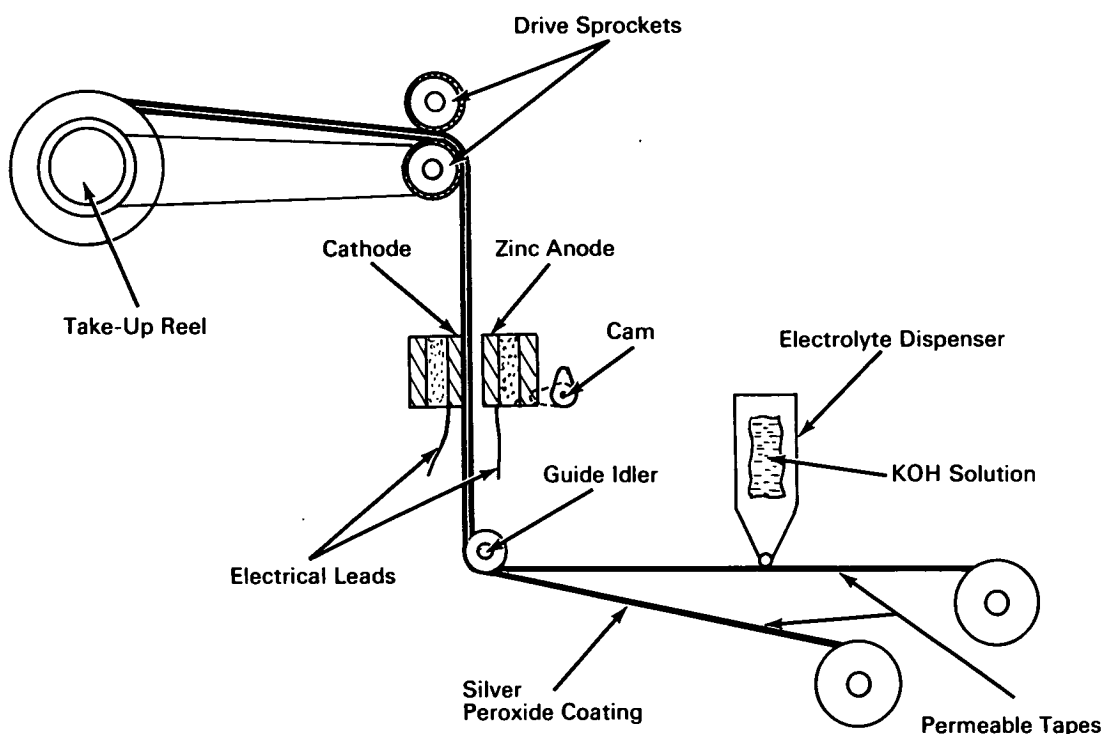


NASA TECH BRIEF



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New Energy Storage Concept Uses Tapes



The problem:

To develop an energy storage system competitive with existing battery and fuel cell systems.

The solution:

A system of movable permeable tapes with cathode and electrolyte material that may be drawn across an anode to produce electric power. The system features very long shelf life, high efficiency of electrolyte material utilization, and flexible operation.

How it's done:

The present energy storage device is a dual tape system in which a roll of separator tape is coated on one side with silver peroxide in a water-soluble polymeric binder. A dispenser wets the second tape with an electrolyte solution, such as 30% to 40% aqueous KOH. The two tapes are drawn between two electrodes by a spring driven take-up mechanism. One electrode is made of zinc and acts as an anode, while the other is made of an inert conductive material such

(continued overleaf)

as silver and acts as a cathode. When the cam is rotated 90° to the left, it presses the anode against the tapes, which are in turn pressed against the cathode to provide good physical contact between the tapes, and the anode and cathode.

Notes:

1. A cathode utilization of 85% was attained at high current density (150 amp/ft²), and approached 100% at lower current densities.
2. The system has operated within the following parameters:

Current Density	up to 200 amp/ft ²
Tape Speed	0.2 to 1.5 in/min
Electrode Contact Pressure	0.1 to 0.8 lb/in ²
Electrolyte Feed Rate	0.15 to 0.3 cc/min

3. Relatively incompatible couples can be used because activation takes place just prior to discharge.

Patent status:

Title to this invention has been waived under the provisions of the National Aeronautics and Space Act (42 U.S.C. 2457 (f)), to Monsanto Research Corporation, Everett 49, Massachusetts.

Source: A. Gruber and Ralph R. Kafesjian
of Monsanto Research Corp.
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